

IN THE CLAIMS:

Claim 1. (Currently amended) A variable stiffness optical fiber shaft for use in interventional therapy, comprising:

an optical fiber having a proximal end and a distal end;
a shape memory collar attached over said distal end of said optical fiber;
a tapered reinforcing tube bonded to said optical fiber, said optical fiber extending therethrough, the reinforcing tube having a thickness that varies over the length of the reinforcing tube; [[and]]
a reinforcing braid attached over said optical fiber and over a distal portion of said reinforcing tube; and
a distal sheath formed of heat shrink material connected to said distal end of said optical fiber and extending over a portion of said shape memory collar.

Claim 2. (Original) The variable stiffness optical fiber shaft of Claim 1, further comprising a radiopaque marker attached to said optical fiber.

Claims 3-4 (Cancelled)

Claim 5. (Original) The variable stiffness optical fiber shaft of Claim 1, wherein said optical fiber comprises a covering of an outer buffer, and wherein said outer buffer is removed from a distal portion of said optical fiber.

Claim 6. (Original) The variable stiffness optical fiber shaft of Claim 1, further comprising a connecting hub attached over a proximal portion of said optical fiber.

Claim 7. (Original) The variable stiffness optical fiber shaft of Claim 6, wherein said connecting hub is attached over said proximal portion of said optical fiber with adhesive.

Claim 8. (Original) The variable stiffness optical fiber shaft of Claim 6, further comprising a strain relief member attached over said proximal portion of said optical fiber.

Claims 9-11 (Cancelled)

Claim 12. (Original) The variable stiffness optical fiber shaft of Claim 1, further comprising a reinforcing coil attached over said optical fiber and under a distal portion of the reinforcing tube.

Claim 13. (Original) The variable stiffness optical fiber shaft of Claim 1, further comprising a strain relief member attached over said proximal portion of said optical fiber.

Claim 14. (Original) The variable stiffness optical fiber shaft of Claim 1, wherein said reinforcing braid is formed of stainless steel.

Claim 15. (Original) The variable stiffness optical fiber shaft of Claim 2, wherein said radiopaque marker is attached to said distal portion of said optical fiber.

Claim 16. (Original) The variable stiffness optical fiber shaft of Claim 15, wherein said radiopaque marker comprises a platinum wire coil.

Claim 17. (Currently amended) The variable stiffness optical fiber shaft of Claim 1 ~~Claim 3~~, wherein said shape memory collar is attached over said distal end of said optical fiber by adhesive.

Claim 18. (Currently amended) The variable stiffness optical fiber shaft of Claim 1 ~~Claim 4~~, wherein said distal sheath is formed of polyethylene.

Claim 19. (Cancelled)

Claim 20. (Currently amended) A method of constructing a variable stiffness optical fiber shaft comprising the steps of:

providing an optical fiber, said optical fiber having a proximal end and a distal end;

attaching a shape memory collar over said distal end of said optical fiber;

bonding a tapered reinforcing tube to a proximal portion of said optical fiber, said optical fiber extending through said reinforcing tube, the reinforcing tube having a thickness varying over the length of the reinforcing tube; [[and]]

applying a reinforcing braid over a middle to distal portion of said optical fiber;

and

attaching a distal sheath formed of heat shrink material over said distal end of said optical fiber, said distal sheath extending over a portion of said shape memory collar.

Claim 21. (Original) The method of Claim 20, further comprising the step of attaching a radiopaque marker to a distal portion of said optical fiber.

Claim 22. (Original) The method of Claim 20, wherein said step of applying a reinforcing braid comprises disposing a proximal portion of said reinforcing braid over a distal portion of said reinforcing tube.

Claims 23-24 (Cancelled)

Claim 25. (Original) The method of Claim 20, wherein said optical fiber is covered with an outer buffer, and further comprising the step of removing said outer buffer from a distal portion of said optical fiber.

Claim 26. (Original) The method of Claim 20, further comprising the step of attaching a connecting hub over a proximal portion of said optical fiber.

Claim 27. (Original) The method of Claim 26, wherein said step of attaching a connecting hub comprises bonding said connecting hub over a proximal portion of said optical fiber with adhesive.

Claim 28. (Original) The method of Claim 20, further comprising the step of attaching a strain relief member over said proximal portion of said optical fiber.

Claim 29. (Original) The method of Claim 20, further comprising the step of polishing the proximal end of the optical fiber for connection of said proximal end of the optical fiber to an optical fiber ferrule.

Claim 30. (Cancelled)

Claim 31. (Original) The method of Claim 20, further comprising the step of applying a reinforcing coil over said optical fiber.

Claim 32. (Original) The method of Claim 21, wherein said radiopaque marker comprises a platinum coil.

Claim 33. (Currently amended) The method of Claim 20 ~~Claim 23~~, wherein said step of attaching a shape memory collar comprises bonding said shape memory collar to said distal end of said optical fiber with adhesive.

Claim 34. (Cancelled)

Claim 35. (Original) The method of Claim 31, wherein said step of applying a reinforcing coil comprises applying said reinforcing coil over a distal portion of said optical fiber and under a distal portion of said reinforcing tube.